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			5c. PROGRAM ELEMENT NUMBER 611102		
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14. ABSTRACT Free living organisms often experience a variety of environments. Some of these environments are potentially harmful. Thus, survival of the organism requires the ability to mount an appropriate response. This ability entails the capacity to sense a change in conditions taking place in the organism's surroundings. A change in conditions can also be detected by the consequences it has on cytosolic components. This information is then transmitted to a regulatory factor responsible for mounting an adaptive response. That is, the organism modifies the amount and/or the activity of the effectors enabling its survival under the stress being experienced.					
15. SUBJECT TERMS Final Report					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	15. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON Dianne Newman
a. REPORT UU	b. ABSTRACT UU	c. THIS PAGE UU			19b. TELEPHONE NUMBER 626-395-3543

Report Title

Final Report: 2016 Microbial Stress Response GRC/GRS

ABSTRACT

Free living organisms often experience a variety of environments. Some of these environments are potentially harmful. Thus, survival of the organism requires the ability to mount an appropriate response. This ability entails the capacity to sense a change in conditions taking place in the organism's surroundings. A change in conditions can also be detected by the consequences it has on cytosolic components. This information is then transmitted to a regulatory factor responsible for mounting an adaptive response. That is, the organism modifies the amount and/or the activity of the effectors enabling its survival under the stress being experienced.

The meeting explored the variety of stresses and responses that microbes experiences in abiotic as well as host-associated environments. Responses at atomic resolution as well as at the multi-cellular level were discussed. The meeting examined the mechanistic basis for the behaviors adopted by bacteria under stress as well as the evolution of these strains. In addition, it investigated how the increasing knowledge of bacterial physiology and stress response can be harnessed for applications that can be of practical use to society in general. Attendees were encouraged to present posters of their most exciting research. Oral presenters were selected from the submitted abstracts.

Enter List of papers submitted or published that acknowledge ARO support from the start of the project to the date of this printing. List the papers, including journal references, in the following categories:

(a) Papers published in peer-reviewed journals (N/A for none)

<u>Received</u>	<u>Paper</u>
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TOTAL:

Number of Papers published in peer-reviewed journals:

(b) Papers published in non-peer-reviewed journals (N/A for none)

<u>Received</u>	<u>Paper</u>
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TOTAL:

Number of Papers published in non peer-reviewed journals:

(c) Presentations

Number of Presentations:

Non Peer-Reviewed Conference Proceeding publications (other than abstracts):

Received Paper

TOTAL:

Number of Non Peer-Reviewed Conference Proceeding publications (other than abstracts):

Peer-Reviewed Conference Proceeding publications (other than abstracts):

Received Paper

TOTAL:

Number of Peer-Reviewed Conference Proceeding publications (other than abstracts):

(d) Manuscripts

Received Paper

TOTAL:

Number of Manuscripts:

Books

Received Book

TOTAL:

TOTAL:

Patents Submitted

Patents Awarded

Awards

Graduate Students

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
FTE Equivalent:	
Total Number:	

Names of Post Doctorates

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
FTE Equivalent:	
Total Number:	

Names of Faculty Supported

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
FTE Equivalent:	
Total Number:	

Names of Under Graduate students supported

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
FTE Equivalent:	
Total Number:	

Student Metrics

This section only applies to graduating undergraduates supported by this agreement in this reporting period

The number of undergraduates funded by this agreement who graduated during this period:

The number of undergraduates funded by this agreement who graduated during this period with a degree in science, mathematics, engineering, or technology fields:.....

The number of undergraduates funded by your agreement who graduated during this period and will continue to pursue a graduate or Ph.D. degree in science, mathematics, engineering, or technology fields:.....

Number of graduating undergraduates who achieved a 3.5 GPA to 4.0 (4.0 max scale):.....

Number of graduating undergraduates funded by a DoD funded Center of Excellence grant for Education, Research and Engineering:.....

The number of undergraduates funded by your agreement who graduated during this period and intend to work for the Department of Defense

The number of undergraduates funded by your agreement who graduated during this period and will receive scholarships or fellowships for further studies in science, mathematics, engineering or technology fields:

Names of Personnel receiving masters degrees

NAME

Total Number:

Names of personnel receiving PHDs

NAME

Total Number:

Names of other research staff

NAME

PERCENT SUPPORTED

FTE Equivalent:

Total Number:

Sub Contractors (DD882)

Inventions (DD882)

Scientific Progress

Technology Transfer



GORDON RESEARCH CONFERENCES

FINAL PROGRESS REPORT

Army Research Office

Microbial Stress Response GRC/GRS

Grant Number W911NF-16-1-0149

July 16-22, 2016

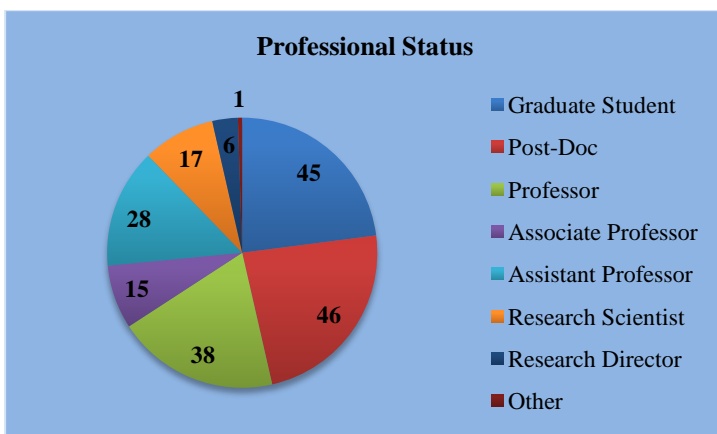
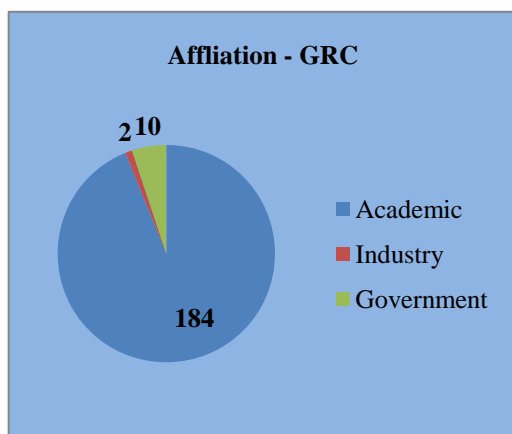
Operational Summary

The Gordon Research Conference (GRC) and Gordon Research Seminar (GRS) on Microbial Stress Response were held at the Mount Holyoke College in South Hadley, Massachusetts from July 16-22, 2016. The meeting covered a variety of scientific topics and the content presented was highly rated by participants.



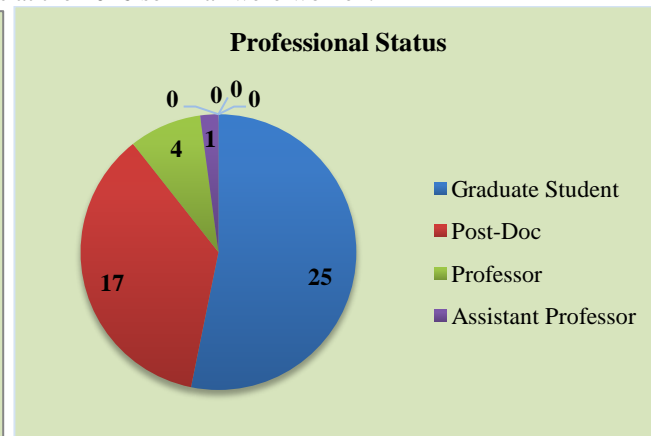
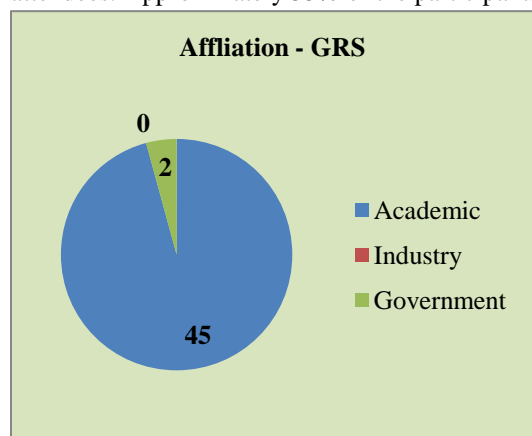
Conference Participants

The Conference was well-attended with 196 participants. Scientists from academia represented 94% of the participants while attendees from government accounted for 5% and those from industry totaled 1%. The meeting also attracted a strong mix of young investigators and senior scientists. Students and post-docs accounted for 53% of all attendees. Approximately 37% of the participants at the 2016 meeting were women.



Seminar Participants

The Seminar was well-attended with 47 participants. Scientists from academia represented 96% of the participants while attendees from government accounted for 4%. Students and post docs combined accounted for 89% of all attendees. Approximately 55% of the participants at the 2016 seminar were women.



Conference Program

Free living organisms often experience a variety of environments. Some of these environments are potentially harmful. Thus, survival of the organism requires the ability to mount an appropriate response. This ability entails the capacity to sense a change in conditions taking place in the organism's surroundings. A change in conditions can also be detected by the consequences it has on cytosolic components. This information is then transmitted to a regulatory factor responsible for mounting an adaptive response. That is, the organism modifies the amount and/or the activity of the effectors enabling its survival under the stress being experienced.

The 2016 Microbial Stress Response meeting explored the variety of stresses and responses that microbes experiences in abiotic as well as host-associated environments. Responses at atomic resolution as well as at the multi-cellular level were discussed. The meeting examined both the mechanistic basis for the behaviors adopted by bacteria under stress as well as the evolution of these strains. In addition, it investigated how the increasing knowledge of bacterial physiology and stress response can be harnessed for applications that can be of practical use to society in general. Attendees were encouraged to present posters of their most exciting research. Oral presenters were selected from the submitted abstracts.

The Gordon Research Seminar on Microbial Stress Response integrated research across basic and applied scientific fields to explore topics including but not limited to: 1) microbial responses to biotic and abiotic stress, 2) microbial stress responses in interspecies environments, 3) stress-induced changes in microbial lifestyles, and 4) detecting microbial stress responses. The two-day seminar included cutting-edge research presented by young scientists as well as a mentoring panel composed of leading researchers in microbiology and microbial stress.

Conference Budget

Funding provided by the Army Research Office supported partial registration for 5 assistant professors, 2 professors, 1 research scientist and 3 associate professors at the GRC. Funding provided by the Army Research Office supported partial registration and/or travel for 1 professor, 7 graduate students and 6 post docs at the GRS.

Conference Feedback

Participants had an opportunity to provide feedback at the end of the Conference. The feedback collected from the meeting was extremely positive. Evaluations included numerous positive remarks regarding the diversity of speakers, the keynote speaker, poster sessions and the interactions among the attendees. Evaluations from the GRS included positive comments regarding the new ideas and techniques presented, the discussions after the talks and the poster presentations.

GRC would like to thank the Army Research Office for its continued support of the meetings. The contributions received from the Army Research Office have been critical to the success of the conferences and are having a measurable impact in advancing the frontiers of science worldwide.

Dr. Eduardo Groisman, GRC Chair
Yale School of Medicine

Dr. Dianne Newman, GRC Co-Chair
California Institute of Technology

Dr. Julia Willett, GRS Chair
University of California, Santa Barbara

Dr. Phillip Bennallack, GRS Co-Chair
Brigham Young University

Dr. Nancy Ryan Gray
President and Chief Executive Officer
Gordon Research Conferences

Microbial Stress Response

Gordon Research Conference

Sensing, Adaptation and Evolution in Microbes that Experience Stress

July 17-22, 2016

Mount Holyoke College

South Hadley, MA

Chairs: [Eduardo A. Groisman](#) & [Dianne K. Newman](#)

Vice Chairs: [Petra A. Levin](#) & [William W. Navarre](#)

Contributors



SIMONS FOUNDATION



The conference is also supported by the U.S. Department of Energy.

Meeting Program

Sunday

2:00 pm - 9:00 pm

Arrival and Check-in

6:00 pm	Dinner
7:30 pm - 7:40 pm	Welcome / Introductory Comments by GRC Site Staff
7:40 pm - 9:30 pm	Keynote Session: From Physiology to Stress Discussion Leaders: Eduardo Groisman (Yale School of Medicine, USA) and Dianne Newman (California Institute of Technology / Howard Hughes Medical Institute, USA)
7:40 pm - 8:30 pm	Susan Gottesman (National Cancer Institute, NIH, USA) "Integrating the Bacterial Response to Stress via Post-Transcriptional Regulation"
8:30 pm - 8:40 pm	Discussion
8:40 pm - 9:20 pm	Moselio Schaechter (San Diego State University, USA) "Small Things Considered"
9:20 pm - 9:30 pm	Discussion

Monday

7:30 am - 8:30 am	Breakfast
8:30 am	Group Photo
9:00 am - 12:30 pm	Variations in Bacterial Adaptive Responses Discussion Leader: Amy Cheng Vollmer (Swarthmore College, USA)
9:00 am - 9:25 am	Mark Buttner (John Innes Centre, United Kingdom) "Translational Control of the Oxidative Stress Response in <i>Streptomyces</i> "
9:25 am - 9:35 am	Discussion
9:35 am - 10:00 am	Nicola Stanley-Wall (University of Dundee, United Kingdom) "Hiding Under a 'Raincoat' in the <i>Bacillus subtilis</i> Biofilm"
10:00 am - 10:10 am	Discussion
10:10 am - 10:20 am	Selected from Poster Abstracts: Niels Bradshaw (Harvard University, USA) "A Conserved Switch Regulates Phosphatase Activity to Initiate Cell-Specific Transcription in Response to Spatial Cues"
10:20 am - 10:25 am	Discussion
10:25 am - 10:35 am	Selected from Poster Abstracts: Megan Bergkessel (California Institute of

Technology / Howard Hughes Medical Institute, USA)
"SutA Is a Global Transcriptional Regulator During Slow Growth in *Pseudomonas aeruginosa*"

10:35 am - 10:40 am Discussion

10:40 am - 11:05 am Coffee Break

11:05 am - 11:30 am **Urs Jenal** (Biozentrum, University of Basel, Switzerland)
"Deciphering Speed: The Role of c-di-GMP in Bacterial Surface Colonization and Virulence"

11:30 am - 11:40 am Discussion

11:40 am - 12:05 pm **Nicholas Shikuma** (San Diego State University, USA)
"A Tail of Phage and Tubeworms: How Do Bacteria Stimulate Animal Development?"

12:05 pm - 12:15 pm Discussion

12:15 pm - 12:25 pm Selected from Poster Abstracts: **Lars Dietrich** (Columbia University, USA)
"Temperature Regulation of a Biofilm-Specific Cytochrome Oxidase in *Pseudomonas aeruginosa*"

12:25 pm - 12:30 pm Discussion

12:30 pm Lunch

1:30 pm - 4:00 pm Free Time

4:00 pm - 6:00 pm Poster Session

6:00 pm Dinner

7:30 pm - 9:30 pm **A Diversity in Bacterial Stress Responses**

Discussion Leader: **Joan Slonczewski** (Kenyon College, USA)

7:30 pm - 7:55 pm **Alexander Petroff** (Rockefeller University, USA)
"Hydrodynamics and Collective Behavior of Sediment Microbes"

7:55 pm - 8:05 pm Discussion

8:05 pm - 8:30 pm **Paula Welander** (Stanford University, USA)
"Sterol Biosynthesis and Function in the Bacterial Domain"

8:30 pm - 8:40 pm Discussion

8:40 pm - 8:50 pm Selected from Poster Abstracts: **Amy Schmid** (Duke University, USA)
"Mapping Transcription Network Function to Phenotype Using Systematic Deletion Analysis in an Archaeal Extremophile"

8:50 pm - 8:55 pm Discussion

8:55 pm - 9:20 pm **Arash Komeili** (University of California, Berkeley, USA)
"Bacterial Organelles as Novel Mediators of Iron Stress Responses"

9:20 pm - 9:30 pm Discussion

Tuesday

7:30 am - 8:30 am Breakfast

9:00 am - 12:30 pm **Stress Response: From Structure to Group Behavior**

Discussion Leader: **Kelly Hughes** (University of Utah, USA)

9:00 am - 9:10 am Introduction by Discussion Leader

9:10 am - 9:35 am **Martin Ackermann** (ETH Zurich, Switzerland)
"History-Dependence in Bacterial Stress Response – Scaling up from Single Cells to Group Behavior"

9:35 am - 9:45 am Discussion

9:45 am - 10:10 am **Karine Gibbs** (Harvard University, USA)
"Kin Recognition and Communication in a Bacterial Community"

10:10 am - 10:20 am Discussion

10:20 am - 10:30 am Selected from Poster Abstracts: **Lyle Simmons** (University of Michigan, USA)
"The Consequences of Frequent Ribonucleotide Incorporation into Genomic DNA"

10:30 am - 10:35 am Discussion

10:35 am - 11:05 am Coffee Break

11:05 am - 11:30 am **Karina Xavier** (Instituto Gulbenkian de Ciência, Calouste Gulbenkian Foundation, Portugal)
"Manipulation of the Quorum Sensing Signal AI-2 Affects the Antibiotic-Treated Gut Microbiota"

11:30 am - 11:40 am Discussion

11:40 am - 12:05 pm **Patricia Casino** (University of Valencia, Spain)
"Understanding Two-Component Systems Through Histidine Kinase and Response"

Regulator Structures"

12:05 pm - 12:15 pm	Discussion
12:15 pm - 12:25 pm	Selected from Poster Abstracts: Oleg Igoshin (Rice University, USA) "Detecting Starvation Stress Without Specific Metabolite Sensing: Control of the Sporulation Decision in <i>Bacillus subtilis</i> "
12:25 pm - 12:30 pm	Discussion
12:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	<u>Poster Session</u>
6:00 pm	Dinner
7:30 pm - 9:30 pm	Translation and Replication Stress Discussion Leader: Patricia Kiley (University of Wisconsin-Madison, USA)
7:30 pm - 7:55 pm	James Williamson (The Scripps Research Institute, USA) "Macroeconomics of the Bacterial Proteome"
7:55 pm - 8:05 pm	Discussion
8:05 pm - 8:15 pm	Selected from Poster Abstracts: Mauricio Pontes (Yale University, USA) "Less Is More: Reducing Ribosome Biosynthesis to Promote Translation"
8:15 pm - 8:20 pm	Discussion
8:20 pm - 8:45 pm	Christine Jacobs-Wagner (Yale University, USA) "DNA Replication-Dependent Stress"
8:45 pm - 8:55 pm	Discussion
8:55 pm - 9:20 pm	Jade Wang (University of Wisconsin-Madison, USA) "The Signature of Replication-Transcription Conflict in Bacteria"
9:20 pm - 9:30 pm	Discussion

Wednesday

7:30 am - 8:30 am	Breakfast
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9:00 am - 12:30 pm

Genetic and Phenotypic Resistance to Antimicrobial Agents

Discussion Leader: **Amy Gehring** (Williams College, USA)

9:00 am - 9:25 am

Dan Andersson (Uppsala University, Sweden)

"Evolution of Antibiotic Resistance"

9:25 am - 9:35 am

Discussion

9:35 am - 10:00 am

Sophie Helaine (Imperial College London, United Kingdom)

"*Salmonella* Forms Intracellular Persisters with TacT"

10:00 am - 10:10 am

Discussion

10:10 am - 10:20 am

Selected from Poster Abstracts: **Steven Bark** (University of Houston, USA)

"Molecular Studies on Actinobacterial Dormancy in *M. tuberculosis* and *M. luteus*"

10:20 am - 10:25 am

Discussion

10:25 am - 10:35 am

Selected from Poster Abstracts: **Susanne Gebhard** (University of Bath, United Kingdom)

"Joint Venture - ABC Transporters and Histidine Kinases Communicate to Regulate Antimicrobial Peptide Resistance in Gram Positive Bacteria"

10:35 am - 10:40 am

Discussion

10:40 am - 11:05 am

Coffee Break

11:05 am - 11:30 am

Nathalie Balaban (Hebrew University of Jerusalem, Israel)

"Bimodal Growth Phenotype in Pathogenic *E. coli*"

11:30 am - 11:40 am

Discussion

11:40 am - 12:05 pm

Michael Gilmore (Harvard Medical School, USA)

"Antibiotic Resistance and Virulence in Gram Positive Bacteria"

12:05 pm - 12:15 pm

Discussion

12:15 pm - 12:25 pm

Selected from Poster Abstracts: **Elizabeth Libby** (Columbia University, USA)

"Noise in Signaling Pathways Drives Phenotypic Variability in Antibiotic Tolerance"

12:25 pm - 12:30 pm

Discussion

12:30 pm

Lunch

1:30 pm - 4:00 pm

Free Time

4:00 pm - 6:00 pm Poster Session

6:00 pm Dinner

7:00 pm - 7:30 pm Business Meeting

Nominations for the Next Vice Chair; Fill in Conference Evaluation Forms; Discuss Future Site and Scheduling Preferences; Election of the Next Vice Chair

7:30 pm - 9:30 pm **Coping with Oxidative Stress**

Discussion Leader: **Monica Chander** (Bryn Mawr College, USA)

7:30 pm - 7:55 pm **Graham Walker** (Massachusetts Institute of Technology, USA)
"Oxidative Stress and DNA Damage: A Broader Perspective on Antibiotic Death and Resistance"

7:55 pm - 8:05 pm Discussion

8:05 pm - 8:30 pm **Ursula Jakob** (University of Michigan, USA)
"Role of Polyphosphate in Stress Response and Amyloidogenesis"

8:30 pm - 8:40 pm Discussion

8:40 pm - 8:50 pm Selected from Poster Abstracts: **Dao Nguyen** (McGill University, Canada)
"Superoxide Dismutases in *Pseudomonas aeruginosa* Antibiotic Tolerance"

8:50 pm - 8:55 pm Discussion

8:55 pm - 9:20 pm **Frederic Barras** (CNRS, France)
"Repairing Oxidized Proteins by the MSR (Methionine Sulfoxide Reductase) Systems"

9:20 pm - 9:30 pm Discussion

Thursday

7:30 am - 8:30 am Breakfast

9:00 am - 12:30 pm **An Expansive View of Bacterial Physiology**

Discussion Leader: **Chris Kaiser** (Massachusetts Institute of Technology, USA)

9:00 am - 9:25 am **John Helmann** (Cornell University, USA)
"Metal Ion Efflux and the Origins of Metal Toxicity"

9:25 am - 9:35 am Discussion

9:35 am - 9:45 am	Selected from Poster Abstracts: Yongqin Jiao (Lawrence Livermore National Laboratory, USA) "Uncovering Uranium Resistance Mechanisms in <i>Caulobacter crescentus</i> "
9:45 am - 9:50 am	Discussion
9:50 am - 10:00 am	Selected from Poster Abstracts: Horia Todor (University of California, San Francisco, USA) "Rewiring the Specificity of Extracytoplasmic Sigma Factors"
10:00 am - 10:05 am	Discussion
10:05 am - 10:30 am	Jennifer Leeds (Novartis Institutes for BioMedical Research, USA) "Critical Assessment of <i>In Vitro</i> and <i>In Vivo</i> Models of Antibacterial Resistance and Fitness Costs Using Peptide Deformylase Inhibitors as Validation Tools"
10:30 am - 10:40 am	Discussion
10:40 am - 11:10 am	Coffee Break
11:10 am - 11:35 am	Richard Roberts (New England Biolabs, USA) "Microbial Methylomes"
11:35 am - 11:45 am	Discussion
11:45 am - 11:55 am	Selected from Poster Abstracts: Katie Berry (Mount Holyoke College, USA) "A Bacterial Three-Hybrid Assay Detects Hfq-sRNA Interactions"
11:55 am - 12:00 pm	Discussion
12:00 pm - 12:10 pm	Selected from Poster Abstracts: Sine Svenningsen (University of Copenhagen, Denmark) "Transfer RNA Is Rapidly Degraded upon Translational Arrest in <i>Escherichia coli</i> "
12:10 pm - 12:15 pm	Discussion
12:15 pm - 12:25 pm	Selected from Poster Abstracts: Linda Kenney (Mechanobiology Institute, National University of Singapore, Singapore) "Acid and Osmotic Stress Drives OmpR-Dependent Cytoplasmic Acidification in <i>E. coli</i> and <i>Salmonella</i> : A Novel View of pH Regulation in Bacteria"
12:25 pm - 12:30 pm	Discussion
12:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	<u>Poster Session</u>

6:00 pm Dinner

7:30 pm - 9:30 pm

Post-Transcriptional Response to Stress

Discussion Leader: **Mark Goulian** (University of Pennsylvania, USA)

7:30 pm - 7:55 pm

Michael Ibba (The Ohio State University, USA)

"Translation Quality Control and the Regulation of Microbial Stress Responses"

7:55 pm - 8:05 pm

Discussion

8:05 pm - 8:15 pm

Selected from Poster Abstracts: **Shai Schlussel** (Ben-Gurion University of the Negev, Israel)

"Start Codon Sequestration of a Leaderless mRNA Governs PafA Induction During Stationary Phase"

8:15 pm - 8:20 pm

Discussion

8:20 pm - 8:45 pm

Jason Crawford (Yale University, USA)

"The Systematic Decoding of a Cytotoxic and Unprecedented Hybrid Pteridine-Nonribosomal Peptide Pathway in an Entomopathogenic Bacterium"

8:45 pm - 8:55 pm

Discussion

8:55 pm - 9:20 pm

Gisela Storz (National Institute of Child Health and Human Development, NIH, USA)

"Small Regulators of Motility"

9:20 pm - 9:30 pm

Discussion

Friday

7:30 am - 8:30 am

Breakfast

9:00 am

Departure

Microbial Stress Response (GRS)

Gordon Research Seminar

Detecting and Exploring Microbial Behavior and Physiology

July 16-17, 2016

Mount Holyoke College

South Hadley, MA

Chairs: **Julia L. Willett** & **Philip R. Bennallack**

Contributors



The conference is also supported by the U.S. Department of Energy.

Meeting Program

Saturday

2:00 pm - 5:00 pm	Arrival and Check-in
3:30 pm - 3:45 pm	Introductory Comments by GRC Site Staff / Welcome by the GRS Conference Chair
3:45 pm - 4:30 pm	Keynote Session: Mechanism and Regulation of Biofilm Formation
	Discussion Leader: Julia Willett (University of California, Santa Barbara, USA)
3:45 pm - 4:15 pm	Fitnat Yildiz (University of California, Santa Cruz, USA) "Mechanism and Regulation of Biofilm Formation"
4:15 pm - 4:30 pm	Discussion
4:30 pm - 6:00 pm	<u>Poster Session</u>
6:00 pm	Dinner
7:30 pm - 9:30 pm	Stress-Induced Changes in Microbial Lifestyles
	Discussion Leader: Saumya Gopalkrishnan (University of Wisconsin-Madison, USA)
7:30 pm - 7:50 pm	Gleb Pishchany (Harvard Medical School, USA) "Novel Antimicrobial Activity Synthesized During Interspecific Interactions"
7:50 pm - 8:00 pm	Discussion

- 8:00 pm - 8:20 pm **Christina Savage** (University of Kentucky, USA)
"DNA-Binding Protein SpoVG Influences Regulation of Glycerol Metabolism by *Borrelia burgdorferi* When Inside the Tick Midgut"
- 8:20 pm - 8:30 pm Discussion
- 8:30 pm - 8:50 pm **Sushovan Dam** (Aix Marseille University, France)
"Post-Transcriptional Regulation of Porin Expression in *Escherichia coli* and Its Impact on Antibiotic Resistance"
- 8:50 pm - 9:00 pm Discussion
- 9:00 pm - 9:20 pm **Paul Price** (Brigham Young University, USA)
"Deciphering the Language of Symbiotic Communication"
- 9:20 pm - 9:30 pm Discussion

Sunday

- 7:30 am - 8:30 am Breakfast
- 9:00 am - 11:00 am **Detecting Microbial Stress Responses**
Discussion Leader: **Magdalena Steinrueck** (IST Austria, Austria)
- 9:00 am - 9:20 am **Kelley Gallagher** (John Innes Centre, United Kingdom)
"Control of the Initiation of Sporulation in the Model Actinomycete *Streptomyces venezuelae*"
- 9:20 am - 9:30 am Discussion
- 9:30 am - 9:50 am **Brett Babin** (California Institute of Technology, USA)
"Non-Canonical Amino Acids for Selective Proteomics: Physiology of an Antibiotic-Tolerant Biofilm Subpopulation"
- 9:50 am - 10:00 am Discussion
- 10:00 am - 10:20 am **Sander Govers** (KU Leuven, Belgium)
"Stochastic Survival-Assay Reveals Rapid Sister Cell Differentiation During Clonal Growth"
- 10:20 am - 10:30 am Discussion
- 10:30 am - 10:50 am **Elizabeth Selleck Fiore** (Massachusetts Eye and Ear Infirmary / Harvard Medical School, USA)
"Identification of the Intrinsic Resistome of *Enterococcus faecalis*"
- 10:50 am - 11:00 am Discussion
- 11:00 am - 12:30 pm Poster Session
Coffee will be served in the poster area from 11:00 am - 11:30 am
- 12:30 pm Lunch
- 1:30 pm - 2:30 pm **Mentorship Component: Career Panel**
Discussion Leader: **Philip Bennallack** (Brigham Young University, USA)
- 1:30 pm - 2:25 pm Panel Discussion

"Careers in Science"

- **Christine Dunham** (Emory University, USA)
- **Amy Gehring** (Williams College, USA)
- **Christopher Hayes** (University of California, Santa Barbara, USA)
- **Michael Laub** (Massachusetts Institute of Technology, USA)

2:25 pm - 2:30 pm Closing Remarks

2:30 pm - 3:00 pm Evaluation Period

Fill in GRS Evaluation Forms

3:00 pm Seminar Concludes

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Microbial Stress Response GRC – Registration List

Ackermann, Martin	ETH Zurich	Speaker	Registered
Andersson, Dan I	Uppsala University	Speaker	Registered
Aranda-Diaz, Andres	Stanford University	Attendee	Registered
Arens, Mathia	TU Delft	Poster Presenter	Registered
Arias Cartin, Rodrigo	Yale University	Poster Presenter	Registered
Arjes, Heidi	Stanford University	Poster Presenter	Registered
Arnold, William K	University of Kentucky	Poster Presenter	Registered
Asmar, Abir	De Duve Institute	Poster Presenter	Registered
Babin, Brett M	California Institute of Technology	Poster Presenter	Registered
Balaban, Nathalie Q	Hebrew University of Jerusalem	Speaker	Registered
Barabote, Ravi D	University of Arkansas	Poster Presenter	Registered
Bark, Steven J	University of Houston	Speaker	Registered
Barras, Frederic	CNRS	Speaker	Registered
Beavers, William	Vanderbilt University School of Medicine	Poster Presenter	Registered
Bennallack, Philip R	Brigham Young University	Poster Presenter	Registered
Bergkessel, Megan	California Institute of Technology	Speaker	Registered
Berry, Katie	Mount Holyoke College	Speaker	Registered
Bhardwaj, Pooja	University of Texas at Dallas	Poster Presenter	Registered
Bischofs, Ilka B	University of Heidelberg	Poster Presenter	Registered
Bradshaw, Niels R	Harvard University	Speaker	Registered
Breland, Erin J	Vanderbilt University Medical Center	Poster Presenter	Registered
Bren, Anat	Weizmann Institute of Science	Poster Presenter	Registered
Burkholder, William F	Institute of Molecular and Cell Biology	Attendee	Registered
Butler-Likely, Tamira K	National Institutes of Health	Poster Presenter	Registered
Buttner, Mark J	John Innes Centre	Speaker	Registered
Casino, Patricia	University of Valencia	Speaker	Registered
Chambers, Bryant A	The University of Texas at Austin	Poster Presenter	Registered
Chander, Monica	Bryn Mawr College	Discussion Leader	Registered
Charoenlap, Nisanart	Chulabhorn Research Institute	Poster Presenter	Registered

Chatterjee, Anushila	State University of New York at Buffalo	Poster Presenter	Registered
Chien, Peter	UMass Amherst	Poster Presenter	Registered
Chilambi, Gayatri Shankar	NTU-SCELS	Poster Presenter	Registered
Cho, Seung-Hyun	Université catholique de Louvain	Poster Presenter	Registered
Cho, You-Hee	CHA University	Poster Presenter	Registered
Collins, Kieran D	UC Santa Cruz	Poster Presenter	Registered
Cote, Jean-Philippe	McMaster University	Poster Presenter	Registered
Crawford, Jason M	Yale University	Speaker	Registered
Crispell, Emily K	Emory University	Poster Presenter	Registered
Dietrich, Lars E	Columbia University	Speaker	Registered
Duchesne, Rachel	University of Rouen	Poster Presenter	Registered
Dunham, Christine M	Emory University	Poster Presenter	Registered
Dwyer, Daniel J	University of Maryland, College Park	Poster Presenter	Registered
Eguchi, Yoko	Kindai University	Poster Presenter	Registered
El Meouche, Imane	Dunlop lab, University of Vermont	Poster Presenter	Registered
Elharar, Yifat	Ben-Gurion University of the Negev	Poster Presenter	Registered
Evans, Chris R	UT Health Science Center	Poster Presenter	Registered
Fan, Yongqiang	UTHealth	Poster Presenter	Registered
Fazli, Magnus Mustafa	University of Copenhagen	Poster Presenter	Registered
Feeney, Morgan A	John Innes Centre	Poster Presenter	Registered
Fozo, Elizabeth M	University of Tennessee	Poster Presenter	Registered
Friedberg, Devorah Genetics	The Hebrew University Faculty of Medicine dept Microbiology and Molecular Attendee	Registered	
Frisch, Ryan L	DuPont Industrial Biosciences	Attendee	Registered
Fumeaux, Coralie	Harvard Medical School	Poster Presenter	Registered
Gallagher, Kelley A	John Innes Centre	Poster Presenter	Registered
Gebhard, Susanne	University of Bath	Speaker	Registered
Gehring, Amy M	Williams College	Discussion Leader	Registered
Gibbs, Karine A	Harvard University	Speaker	Registered
Gilmore, Michael S	Harvard Medical School	Speaker	Registered
Godoy-Carter, Veronica	Northeastern University	Poster Presenter	Registered

Gopalkrishnan, Saumya	University of Wisconsin-Madison	Poster Presenter	Registered
Gottesman, Susan	National Cancer Institute, NIH	Speaker	Registered
Goulian, Mark D	University of Pennsylvania	Discussion Leader	Registered
Govers, Sander K	KU Leuven	Poster Presenter	Registered
Grant, Carly R	University of California, Berkeley	Poster Presenter	Registered
Gray, Michael J	University of Alabama at Birmingham	Poster Presenter	Registered
Grichenko, Olga	Uniformed Services University of the Health Science	Poster Presenter	Registered
Groisman, Eduardo A	Yale School of Medicine	Chair	Registered
Grossman, Alan	Massachusetts Institute of Technology	Attendee	Registered
Guckes, Kirsten R	Vanderbilt University Medical Center	Poster Presenter	Registered
Guest, Randi L	University of Alberta	Poster Presenter	Registered
Guillier, Maude	CNRS UMR8261- IBPC	Poster Presenter	Registered
Guldimann, Claudia	Institute for Food Safety and Hygiene	Poster Presenter	Registered
Hadjifrangiskou, Maria	Vanderbilt University Medical Center	Poster Presenter	Registered
Hallez, Regis	University of Namur	Poster Presenter	Registered
Harp, John D	University of Tennessee	Poster Presenter	Registered
Hayes, Christopher S	University of California, Santa Barbara	Attendee	Registered
Heinrich, Kristina	Philipps University Marburg	Poster Presenter	Registered
Helaine, Sophie	Imperial College London	Speaker	Registered
Helmann, John D	Cornell University	Speaker	Registered
Henry, Theresa C	Princeton University	Speaker	Registered
Herrera Dominguez, Carmen	European Molecular Biology Laboratory	Poster Presenter	Registered
Hochschild, Ann	Harvard Medical School	Poster Presenter	Registered
Hughes, Kelly	University of Utah	Discussion Leader	Registered
Ibba, Michael	The Ohio State University	Speaker	Registered
Igoshin, Oleg A	Rice University	Speaker	Registered
Jacobs-Wagner, Christine	Yale University	Speaker	Registered
Jakob, Ursula	University of Michigan	Speaker	Registered
Jemielita, Matthew	Princeton University	Attendee	Registered
Jenal, Urs	Biozentrum, University of Basel	Speaker	Registered

Jiao, Yongqin	Lawrence Livermore National Laboratory	Speaker	Registered
Kaiser, Chris	Massachusetts Institute of Technology	Discussion Leader	Registered
Kearney, Sean M	MIT	Poster Presenter	Registered
Keiler, Kenneth C	Pennsylvania State University	Poster Presenter	Registered
Kenney, Linda J	National University of Singapore	Speaker	Registered
Khandekar, Shaunak	Université catholique de Louvain	Poster Presenter	Registered
Kiley, Patricia J	University of Wisconsin-Madison	Discussion Leader	Registered
Kokoska, Robert J	Army Research Laboratory, Army Research Office	Attendee	Registered
Kolodkin-Gal, Ilana	Weizmann Institute of Science	Poster Presenter	Registered
Komeili, Arash	University of California, Berkeley	Speaker	Registered
Koumoutsis, Alexandra	EMBL	Poster Presenter	Registered
Krishnan, Sushma	Indian Institute of Science, Bangalore	Poster Presenter	Registered
Lassak, Jurgen M	Ludwig-Maximilians Universität München	Poster Presenter	Registered
Laub, Michael	Massachusetts Institute of Technology	Attendee	Registered
Lee, Kang-Lok	Seoul National University	Poster Presenter	Registered
Lee, Eunjin	Kyung Hee University	Poster Presenter	Registered
Leeds, Jennifer A	Novartis Institutes for BioMedical Research	Speaker	Registered
Leimer, Nadja	University of Zurich	Poster Presenter	Registered
Leroux, Michele	Massachusetts Institute of Technology	Attendee	Registered
Levin, Petra A	Washington University in St. Louis	Vice Chair	Registered
Libby, Elizabeth	Columbia University	Speaker	Registered
Lin, Kan	Weill Cornell Medical College	Poster Presenter	Registered
Ling, Jiqiang	University of Texas Health Science Center, Houston	Attendee	Registered
Liu, Jane M	Pomona College	Poster Presenter	Registered
Lund, Peter A	University of Birmingham	Attendee	Registered
Mandin, Pierre	CNRS	Poster Presenter	Registered
Martins, Dorival	McGill University Health Centre	Poster Presenter	Registered
Mascher, Thorsten	Technische Universität (TU) Dresden	Speaker	Registered
Masi, Muriel	Aix Marseille Université	Poster Presenter	Registered
Massoni, Shawn C	Mount Holyoke College	Poster Presenter	Registered

Matson, Jyl S	University of Toledo	Poster Presenter	Registered
Mettert, Erin L	University of Wisconsin-Madison	Poster Presenter	Registered
Mitchell, Angela M	Princeton University	Poster Presenter	Registered
Mitosch, Karin	IST Austria	Poster Presenter	Registered
Mongkolsuk, Skorn	Mahidol University	Poster Presenter	Registered
Murch, Amber L	Defence Science and Technology laboratory	Poster Presenter	Registered
Mutlu, Alper	Universität Heidelberg	Poster Presenter	Registered
Navarre, William W	University of Toronto	Vice Chair	Registered
Newman, Dianne K	California Institute of Technology	Chair	Registered
Ng, Wai-Leung	Tufts University School of Medicine	Poster Presenter	Registered
Nguyen, Dao	McGill University	Speaker	Registered
Orobio-Hurtado, Rony F.	Clemson University	Attendee	Registered
Overton, Kenneth W	Lawrence Livermore National Lab	Poster Presenter	Registered
Park, Dan	Lawrence Livermore National Lab	Poster Presenter	Registered
Pauleta, Sofia R.	UCIBIO-REQUIMTE	Poster Presenter	Registered
Petroff, Alexander	Rockefeller University	Speaker	Registered
Pishchany, Gleb	Harvard Medical School	Poster Presenter	Registered
Pontes, Mauricio H	Yale University	Speaker	Registered
Price, Paul A	Brigham Young University	Poster Presenter	Registered
Py, Beatrice	CNRS-LCB	Poster Presenter	Registered
Radeck, Jara	TU Dresden	Poster Presenter	Registered
Ragunathan, Preethi T	University of Illinois at Urbana-Champaign	Poster Presenter	Registered
Roberts, Richard J	New England Biolabs	Speaker	Registered
Roe, Jung-Hye	Seoul National University	Poster Presenter	Registered
Romsang, Adisak	Mahidol University	Poster Presenter	Registered
Ryno, Lisa M	Oberlin College	Poster Presenter	Registered
Samhita, Laasya	National Centre for Biological Sciences	Poster Presenter	Registered
Sanchez-Vizuet, Pilar	INSERM U1001	Poster Presenter	Registered
Sannasiddappa, Thippeswamy	University of Birmingham	Poster Presenter	Registered
Savage, Christina R	University of Kentucky	Poster Presenter	Registered

Schaechter, Moselio	San Diego State University	Speaker	Registered
Schlüssel, Shai	Ben-Gurion University of the Negev	Speaker	Registered
Schmid, Amy K	Duke University	Speaker	Registered
Schuster, Christopher F	Imperial College London	Poster Presenter	Registered
Secor, Patrick R	University of Washington	Poster Presenter	Registered
Selleck Fiore, Elizabeth M	Massachusetts Eye and Ear Infirmary	Poster Presenter	Registered
Sen, Ananya	University of Illinois at Urbana-Champaign	Poster Presenter	Registered
Sen, Hrishiraj	The University of Birmingham	Poster Presenter	Registered
Shan, Yue	Northeastern University	Poster Presenter	Registered
Shell, Scarlet S	Worcester Polytechnic Institute	Attendee	Registered
Shikuma, Nicholas	San Diego State University	Speaker	Registered
Siegele, Deborah A	Texas A&M University	Poster Presenter	Registered
Simmons, Lyle A	University of Michigan	Speaker	Registered
Slonczewski, Joan L	Kenyon College	Discussion Leader	Registered
Stanley-Wall, Nicola R	University of Dundee	Speaker	Registered
Steinrueck, Magdalena	IST Austria	Poster Presenter	Registered
Stoebel, Daniel M	Harvey Mudd College	Poster Presenter	Registered
Storz, Gisela T	National Institute of Child Health and Human Development, NIH	Speaker	Registered
Sturm, Alexander	Broad Institute	Poster Presenter	Registered
Sun, Jingjing	The University of Hong Kong	Poster Presenter	Registered
Svenningsen, Sine L	University of Copenhagen	Speaker	Registered
Thomason, Maureen	University of Washington	Poster Presenter	Registered
Tien, Matthew Z	University of Chicago	Poster Presenter	Registered
Todor, Horia	University of California, San Francisco	Speaker	Registered
Turgay, Kursad	Leibniz Universität Hannover	Poster Presenter	Registered
Vadia, Stephen E	Washington University	Poster Presenter	Registered
Vollmer, Amy Cheng	Swarthmore College	Attendee	Registered
Vulin, Clement	ETH Zurich	Poster Presenter	Registered
Wagner-Graham, Mary Ann	Philadelphia University	Poster Presenter	Registered
Walker, Graham C	Massachusetts Institute of Technology	Speaker	Registered
Wang, Jade	University of Wisconsin-Madison	Speaker	Registered
Wassarman, Karen	University of Wisconsin-Madison	Attendee	Registered
Weaver, Jeremy	NIH/NICHD	Poster Presenter	Registered
Welanders, Paula V	Stanford University	Speaker	Registered
Westfall, Corey S	Washington University in St. Louis	Poster Presenter	Registered

White-Ziegler, Christine A	Smith College	Poster Presenter	Registered
Willett, Julia L	University of California, Santa Barbara	Poster Presenter	Registered
Williamson, James R	The Scripps Research Institute	Speaker	Registered
Xavier, Karina B	Calouste Gulbenkian Foundation	Speaker	Registered
Yadavalli, Srujana S	University of Pennsylvania	Poster Presenter	Registered
Yang, Jason H	MIT / Broad Institute	Poster Presenter	Registered
Yeom, Jinki	Yale University	Poster Presenter	Registered
Yildiz, Fitnat H	University of California, Santa Cruz	Attendee	Registered
Yong, Adeline	Singapore Centre for Environmental Life Sciences Eng	Poster Presenter	Registered
Yoo, Ji-Sun	Seoul National University	Poster Presenter	Registered
Zhang, Yan	UC San Francisco	Poster Presenter	Registered
Zhou, Yidan	University of Illinois at Urbana-Champaign	Poster Presenter	Registered

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Bergkessel, Megan	California Institute of Technology	Poster Presenter	Registered
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Krishnan, Sushma	Indian Institute of Science, Bangalore	Poster Presenter	Registered
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Radeck, Jara	TU Dresden	Poster Presenter	Registered
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Schuster, Christopher F	Imperial College London	Poster Presenter	Registered
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Tien, Matthew Z	University of Chicago	Poster Presenter	Registered
Vulin, Clement	ETH Zurich	Poster Presenter	Registered
Willett, Julia L	University of California, Santa Barbara	Chair	Registered
Wong, Felix	Harvard University	Poster Presenter	Registered
Yang, Jason H	MIT / Broad Institute	Speaker	Registered
Yildiz, Fitnat H	University of California, Santa Cruz	Speaker	Registered
Yong, Adeline	Singapore Centre for Environmental Life Sciences Eng	Poster Presenter	Registered